REMARKS/ARGUMENTS

Applicants have studied the Office Action dated September 26, 2005 and have made amendments to the claims. By this amendment, claims 1, 5, 8 and 22 are amended. The dependency of claim 8 was changed, and claims 1, 5 and 22 were amended to correct minor informalities. By this amendment, new claims 23-30 are added. The new claims find support in the specification as originally filed; therefore, no new matter was added. No claims are canceled. Claims 1-30 are pending. It is submitted that the application, as amended, is in condition for allowance. Reconsideration and allowance of the pending claims in view of the following remarks is respectfully requested.

Claim Rejections under 35 USC §103

The Examiner rejected claims 1-6, 10, 14, 21 and 22 under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art, hereinafter "APA", in view of U.S. Patent No. 4,251,803 to Baldwin et al., hereinafter "Baldwin".

The present invention specifically relates to an analog-to-digital converter. In this context, the invention addresses the problem of reducing the offset caused by the parallel quantizers, especially in multistage converters wherein the offset may involve an overflow of the downstream stages (see page 4, lines 4-20). For this purpose, the invention proposes a solution that applies to a converter with multi-stage architecture, wherein a global output signal is obtained by suitably combining a local output signal of each stage (see page 11, line 9 to page 12, line 3). Except for the first stage in the sequence, each non-final stage determines an analog residue corresponding to its quantization error and uses the analog residue to generate a local input signal for the next stage. In the invention, at least one non-final stage based on a parallel quantizer calculates a digital correction signal as the average of a digital residue, which is given by the

digital representation of the analog residue provided by the local output signals of one or more of the stages following. The digital correction signal is then used to compensate the offset error of the stage at issue. Unlike the cited prior art, the invention exploits signals that are already available in the downstream stages (see page 19, lines 14-18).

On the other hand, Baldwin relates to a completely different application, i.e., a wireless transceiver with zero intermediate frequency (ZIF) architecture. In this context, Baldwin addresses the problem caused by the DC offset voltage of the receiver (see column 7, line 53 through column 8, line 3). This problem may be due to a number of reasons, which do not share anything with the quantization error, which is the subject of the present invention (see column 12, lines 5-54). Therefore, the DC loop 347 does not act on the quantization error of the ADC 313 cited by the Examiner. Conversely, this ADC 313 is only used to provide the digital representation of the DC offset to be corrected before the amplifiers 273, 275 (see column 13, lines 1-12). In any case, the DC estimate block 319 is external to the ADC 313, and then can only provide the mean value of the whole signal that is output by this ADC 313 (see Figure 3 of Baldwin). In sharp contrast thereto, in the invention, the logic module 210 of the invention, in order to determine the offset error of stage 105, acts on the local output signal of the next stage(s) 110. In other words, the logic module 210 uses neither the local output signal of the stage at issue 105 nor the global output signal of the whole converter 200 (see Figure 2 of the application).

Therefore, Baldwin does not teach, suggest or disclose the second element of claim 1,

> ***"means, electrically coupled with at least one selected stage of the at least one stage, for estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage"***

For the foregoing reasons, nor does Baldwin teach, suggest or disclose the second step of claim 21,

> ***"for at least one selected stage of the at least one stage, estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage"***

For the foregoing reasons, nor does Baldwin teach, suggest or disclose the fourth element of claim 22,

> ***"means, electrically coupled with at least one selected stage of the at least one stage, for estimating an analog correction signal indicative of the mean value of a quantization error of the at least one selected stage"***

Therefore, Baldwin, whether taken alone or in any combination with the APA, neither shows nor suggests the features of independent claims 1, 21 and 22. Claims 1, 21 and 22 are, therefore, believed to be patentable over the cited art. Claims 2-20 depend upon independent claim 1, and because dependent claims recite all the limitations of the independent claim, it is believed that dependent claims 2-20 also recite in allowable form.

Therefore, in view of the foregoing remarks, Applicants believe that the rejection of claims 1-6, 10, 14, 21 and 22 under 35 U.S.C. §103(a) has been overcome. Applicants request that the Examiner allow claims 1-6, 10, 14, 21 and 22.

Allowable Subject Matter

The Examiner indicated that claims 7-9, 11-13 and 15-20, objected to as being dependent upon a rejected base claim (claim 1), would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicants thank the Examiner for such indication of allowance; however, applicants believe that claim 1 should be allowed without amendment for patentability, for the reasons stated hereinabove.

It should be noted that new claims 24 and 28 relate to the concept of reducing the resolution of a digital correction signal, which is a subject matter (see claim 7) that the Examiner stated is allowable.

It should be noted that claim 8 relates to the concept of setting the dynamic range of an analog correction signal relative to the quantization error range. The dependency of claim 8 has been changed to be dependent directly on independent claim 1. New claims 26 and 30 relate to the same subject matter as the subject matter of claim 8, which the Examiner stated is allowable.

It should be noted that new claims 25 and 29 relate to the concept of using the combination of a digital filter and an integrator to calculate a digital correction signal on the basis of a digital residue, which is another subject matter (see claim 9) that the Examiner stated is allowable.

The analog-to-digital converter as recited in new claims 23-25 depend upon independent claim 1 (which should be allowed for the reasons set forth hereinabove), and because dependent claims recite all the limitations of the independent claim, it is believed that dependent claims 23-25 also recite in allowable form.

The method as recited in new claim 26 depends upon independent claim 21 (which should be allowed for the reasons set forth hereinabove), and because a dependent claim recites all the limitations of the independent claim, it is believed that dependent claim 26 also recites in allowable form.

The computer system as recited in new claims 27-30 depend upon independent claim 22 (which should be allowed for the reasons set forth hereinabove), and because dependent claims recite all the limitations of the independent claim, it is believed that dependent claims 27-30 also recite in allowable form.

Therefore, in view of the foregoing remarks, Applicants believe that new claims 23-30 should be allowed.

Conclusion

The prior art made of record and not relied upon was reviewed and is not considered pertinent to applicant's disclosure.

The foregoing is submitted as full and complete response to the Official Action mailed September 26, 2005, and it is submitted that claims 1-30 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims1-30 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR §1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything

else is unforeseeable at the time of this amendment by the Applicants and their attorneys.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account 50-1556.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

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